

TITLE: NEW METHOD OF DETERMINING EQUILIBRIUM MOISTURE CONTENT OF TOBACCO

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ABSTRACT: Equilibrium moisture content of tobacco is affected by the humidity and the temperature of the environment. Knowledge of the moisture content is important not only for information on physical properties but also for dryer design, manufacture, storage and preservation. In some methods for the determination of equilibrium moisture content the sample is humidified in a desiccator with saturated salt solutions or is exposed in a conditioning chamber. However, these methods have the disadvantages of long equilibrium times and potential mold growth. We have developed a new method by which water-vapor pressure and sample weight under removed-air conditions in the sample cell are measured directly. In this method equilibrium time is short, only a small quantity of sample is needed, and measurement under high humidity conditions is possible. Moreover, the adsorption isotherm curve can also be obtained continuously. This paper presents the apparatus and procedure and reports the equilibrium moisture contents of cured tobaccos (bright and burley) obtained by the new method (22-80°C, 0-95% RH) compared to conventional methods (22°C, 20-90% RH).

REVIEW: Because the speaker's English was not comprehensible, this review is based on the slides presented. A glass apparatus was shown consisting of a vertical tube; an evaporator; a water vapor vessel connected to a vacuum pump at one head of a T tube; and another vessel at the other head of the T. This vertical vessel contained a thermocouple and a sample holder connected to a vertical arm attached to the weighing arm of a balance. This part of the apparatus also contained a vapor pressure gauge and a recorder. An adsorption/desorption curve of weight fraction of water (0-0.2) versus relative humidity (0-100%) for burley tobacco at 30°C was shown, indicating no difference in the curves. Adsorption isotherms (wt. fraction 0-0.4) of bright yellow tobacco at 20°, 50°, and 80°C showed parallel curves in sequence close together with the 20° curve on top. Another slide of adsorption isotherms of bright and burley tobaccos at 20°C showed two curves approximately parallel with bright on top. The sample size is only 0.7-1.0 grams and the analysis only takes 5-10 hours compared to 5 days for the desiccator method.

-Reviewed by F. Will, III

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